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POISONING HARDWOODS IN SOUTHERN NEW JERSEY

In recent years new chemicals for killing undesirable woody vegetation have come into use. Some of these weed killers have been tested in northern hardwoods and scrub oak in Pennsylvania.*

In the Pine Region of southern New Jersey, where forest management is generally aimed to favor the more valuable softwoods, undesirable hardwoods are a serious problem. On the upland pine sites, the hardwoods are chiefly oaks. On the swamp sites, where whitecedar is the desired species, the hardwoods are red maple, blackgum, and sweetbay.

Chemical weed killers were tested on a small scale as a possible means of controlling

*SEE RESEARCH NOTE NO. 1; AUGUST 1950. AND NO. 6, AUGUST 1951., NORTHEASTERN FOREST EXPERIMENT STATION.

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these hardwoods. The chemicals tried were ammate and a commercial combination of 2,4-D and 2,4,5-T.

Ammate was applied both as a solid and in solution. As a solid, the rate of application was 1 level tablespoonful of ammate crystals for 1- or 2-inch trees; for larger trees the number of tablespoonfuls was figured as diameter (breast high) divided by 2. In solution, 4 pounds of ammate crystals were used per gallon of water.

The 2,4-D and 2,4,5-T combination was tried only in a kerosene solution, 1 part chemical to 20 parts kerosene. The solutions were applied as spray. A small (3-gallon) garden sprayer was used.

Results On Standing Trees

Solid ammate was applied to standing trees by cutting a cup for each tablespoonful. The cups were made with two downward ax strokes, one above the other, and prying the chip out. The cups were 4 to 8 inches above the ground.

Applied in August, ammate was effective in killing all three swamp species. All treated sweetbays died within 1 year; so did their untreated companion sprouts. Treated blackgums also died. Nearly all treated red maples died; but most of their companion sprouts showed little damage.

The oaks (black oak, white oak, chestnut oak, and post oak) were not so susceptible to the poison as the swamp species. Ammate, ap-

plied in July and August, killed 57 percent of the 131 trees treated. The other trees, however, were severely injured.

Results On Stumps

Both poisons were effective in killing freshly cut stumps. Of stumps sprayed with 2,4-D and 2,4,5-T solution, 96 percent had no sprouts the following summer. Of the stumps treated with ammate crystals, 87 percent failed to sprout. The sprouts that did start from the treated stumps were not vigorous. In contrast, 98 percent of the untreated stumps sprouted vigorously.

On older stumps (cut 6 to 9 months before), ammate was tried (1) in freshly cut cups, (2) on the edges of the stump, and (3) in the center of the stump. The treatments were tried in July on both recut stumps and undisturbed stumps.

Applied in freshly cut cups or on the edges of recut stumps, ammate killed all or nearly all sprouts on more than 90 percent of the stumps. Double doses on the edges of undisturbed stumps were equally effective. Applied to the center of the stump, the ammate was far less effective, a single dose on undisturbed stumps killing only 10 percent of the stools (a stool is a stump and its sprouts).

Solutions applied in January to stumps of this kind were not very effective. Used in a Cornell tool, they killed only 27 percent of the treated stools; used as a basal spray, 53 percent. Ammate and the 2,4-D and 2,4,5-T combinations were about equal in effect.

On oak stumps 30 months old, double doses of ammate crystals applied in July to the edges of recut stumps killed 87 percent of the stools and severely injured sprouts on another 10 percent. Foliage sprays of ammate killed 74 percent and injured another 24 percent; but they also killed most of the pine reproduction interspersed among the oak sprouts.

Conclusions

For swamp sites, the treatment of standing trees with ammate was promising. More extensive tests seem warranted.

For upland sites, the most promising treatment was the use of ammate crystals on the edges of freshly cut stumps. The other effective treatments were much more costly.

In stands containing 540 oaks per acre, 1 to 6 inches d.b.h., this treatment cost about \$10 per acre (\$3 for labor at \$1 per man-hour + \$7 for materials, 1950 prices). Treatment of standing trees cost about \$15 per acre (5 more man-hours). The most effective spray treatment with 2,4,-D and 2,4,5-T cost about \$14 per acre for treating freshly cut stumps.

In oak-pine stands less than 40 years old, which usually sprout vigorously after cutting, the use of ammate would probably make weedings unnecessary. In stands more than 40 years old, weeding might be cheaper because there are fewer stumps per acre and many fail to sprout.

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